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| Serial No.: 10/528,730 | : | PATENT APPLICATION |
| In re application of: **Oliver Brasse et al.** | : | |
| Filed: March 22, 2005 | : | **METHOD AND TELECOMMUNICATIONS SYSTEM FOR PROCESSING DIGITALLY STORED SOUND SEQUENCES** |
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# BRIEF ON APPEAL


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## Real Party in Interest

The real party in interest is Siemens Enterprise Communications GmbH and its related United States company Siemens Enterprise Communications Inc.

## Related Appeals and Interferences

There are no related appeals or interferences.

## Status of Claims

Claims 12-25 and 27-33 are currently pending in the application. The status of the claims is that claims 12-25 and 27-33 have been rejected. Claims 1-11 and 26 have been canceled. Applicant is appealing the rejection of claims 12-25 and 27-33.

## Status of Amendments

There are no outstanding amendments or non-entered amendments. A non-final Office Action dated August 3, 2010 (hereafter "the Office Action") was issued after an appeal brief was filed on March 29, 2010. This Office Action reopened prosecution. In response to the Office Action, Applicants filed a notice of appeal and have subsequently filed this apPeal brief herewith.

## Summary of Claimed Subject Matter

The claimed subject matter relates to a PBX and a method for handling digital sound sequences in a telecommunications system having a PBX that is comprised of a CPU, a working memory connected to the CPU, and a switch device connected to the CPU. (*See e.g.* Specification, at page 3, lines 1-11).

Claim 12 is an independent claim for a method for handling digital sound sequences in a telecommunications system having a PBX comprised of a CPU, a working memory that is connected to the CPU, and a switch device connected to the CPU. (*See e.g.,* Specification, at page 3, lines 1-11, Figures 2-3). For example, as shown in Figure 2, a CPU 2.3.1 has a working

memory 2.1 and sound sequences stored in the working memory 2.1. (*See* Specification, at page 10, lines 9-20). Terminals 3.1 to 3.n are connected to the CPU 2.3.1 via a pulse code modulation (PCM) switch 2.2. *Id.*

The method includes the steps of: (1) storing digital sound sequences on the working memory of the PBX (*See e.g.* Specification, at page 10, lines 9-16), (2) connecting a plurality of telecommunication terminals to the PBX (See e.g. i*d.* at page 10, lines 18-20), (3) holding a connection request from at least one telecommunication terminal requesting a connection to another communication terminal (*See e.g. id.* at page 3, lines 12-24, page 5, lines 19-27, page 9, lines 12-19, page 12, lines 10-27), (4) the CPU of the PBX accessing the working memory of the CPU (*See e.g. id.* at page 10, lines 21-25), (5) the switch device of the PBX transmitting the digital sound sequences from the working memory to the at least one telecommunication terminal while the connection request of the at least one telecommunication terminal is being held (*See e.g.* i*d.* at page10, lines 12-22, page 11, lines 1-6).

Claim 13 depends from claim 12 and requires the CPU, which is shown in box 2.3.1 in Figure 3, to perform a data transfer of the stored digital sound sequences between the working memory 2.1 and the switch device 2.2 for the switch device to transmit the digital sound sequences to the one or more telecommunication terminals 3.1 to 3.n while the connection request of the one or more telecommunication terminals is being held. (*See e.g.* Specification, at page 9, lines 12-19, and page 12, lines 20-26). The switch device includes of at least one switch or at least one PCM switch. (*See e.g.* Specification, at page 10, lines 12-22, and page 11, lines 1-6).

Claim 14 depends from claim 12 and requires the PBX to also include a time slot assigner (TSA), which is illustrated as box 2.3.3 in Figure 3. (*See e.g.* Specification, at page 4, lines 11-

20, and page 11, lines 7-18). Data that is transferred must be transferred serially in packets between the PBX and the telecommunication terminal being held. (*See e.g. id.* at page 4, lines 12-25,). The CPU 2.3.1 is connected to the TSA 2.3.3 such that the TSA is configured to assign the digital sound sequences to programmed timeslots. (*See e.g. id.* at page 4, lines 10-21).

Claim 15 depends from claim 13 and requires the PBX to include a time slot assigner (TSA), the data to be transferred packet by packet, and the CPU to be connected to the TSA such that the TSA is configured to access the working memory to assign the digital sound sequences to programmed timeslots. (*See e.g.* Specification at page 4, lines 10-25, and page 11, line 19 through page 12, line 7).

Claim 16 depends from claim 14 and requires the TSA to include a FIFO shift register configured to support a packet-by-packet data transfer of the digital sound sequences. (*See e.g.* Specification, at page 4, lines 10-25, and page 11, lines 7-18).

Claim 17 depends from claim 15 and requires the PBX to include a FIFO shift register configured to support a packet-by-packet data transfer of the digital sound sequences. (*See e.g.* Specification, at page 4, lines 10-25, and page 11, lines 7-18).

Claim 18 depends from claim 12 and requires the PBX to include a microcontroller connected to the CPU such that the microcontroller is initialized by the CPU to perform a transfer of the digital sound sequences. (*See e.g.* Specification, at page 5, lines 11-25, page 11, lines 7-18, page 11, line 22 through page 12, line 7, and page 12, lines 10-19).

Claim 19 depends from claim 18 and requires the microcontroller to be a Direct Memory Access (DMA) controller or a Peripheral Exchange Control (PEC) controller. (*See e.g.* Specification, at page 5, lines 11-25, page 11, lines 7-18, page 11, line 22 through page 12, line 7, and page 12, lines 10-19). The DMA controller is shown in Figure 3 at box 2.3.4.

Claim 20 depends from claim 13 and requires the PBX to also include a microcontroller connected to the CPU such that the microcontroller is initialized by the CPU to perform the transfer of the digital sound sequences. (*See e.g.* Specification, at page 5, lines 11-25, page 11, lines 7-18, page 11, line 22 through page 12, line 7, and page 12, lines 10-19).

Claim 21 depends from claim 18 and requires the CPU to request the microcontroller to set a start address of the digital sound sequences in the working memory and to set a destination address in the FIFO shift register of the TSA in order to play back the digital sound sequences. (*See e.g.* Specification, at page 5, lines 11-25, page 11, lines 7-18, page 11, line 22 through page 12, line 7, page 12, lines 10-19).

Claim 22 depends from claim 12 and requires the CPU to also record sound sequences. The PBX also must include a microcontroller connected to the CPU and the working memory and a TSA connected to the working memory. The TSA has a FIFO shift register. The CPU is configured to request that the microcontroller set a start address of the digital sound sequences in the FIFO shift register of the TSA and to set a destination address in the working memory for recording sound sequences. (*See e.g.* Specification, at page 4, lines 10-25, page 5, lines 11-25, page 11, lines 7-18, page 11, line 22 through page 12, line 7, page 12, lines 10-19).

Claim 23 depends from claim 21 and requires the CPU to request the microcontroller to set the start address of the digital sound sequences in the FIFO shift register of the TSA and to set the destination address in the working memory for recording sound sequences. (*See e.g.* Specification, at page 5, lines 11-25, page 11, lines 7-18, page 11, line 22 through page 12, line 7, and page 12, lines 10-19).

Claim 24 depends from claim 12 and further includes the step of digitizing sound sequences and storing the digitized sound sequences in the working memory by at least one component of the telecommunications system. (*See e.g.* Specification, at page 6, lines 23-26).

Claim 25 depends from claim 17 and requires the TSA to be configured to transmit an interrupt command the CPU to start or to stop a new data transfer at a predefined filling level of the FIFO shift register. (*See e.g.* Specification, at page 12, lines 7-19).

Claim 27 depends from claim 12 and requires the digital sound sequences to be Music on Hold, voice sequences, or signal tones. (*See e.g.* Specification, at page 3, lines 12-16, and page 12, lines 20-26).

Claim 28 depends from claim 12 and requires program code and/or data of telecommunications subscribers to be stored in the working memory. (*See e.g.* Specification, at page 3, lines 15-21).

Claim 29 is an independent claim. Claim 29 defines a method for handling digitally stored sound sequences in a telecommunications system having a PBX 2 such as shown in Figure 2 that includes a CPU 2.3.1, a working memory 2.1 for the CPU, and a switching apparatus 2.2. The method of claim 29 includes the steps of (1) digitally storing sound sequences in the working memory (*See e.g.* Specification, at page 10, lines 9-16), (2) connecting telecommunications terminals to the PBX via the switching apparatus (*See e.g. id.* at page 10, lines 18-20), (3) holding a connection request of at least one telecommunications terminal (*See e.g. id.* at page 3, lines 12-24, page 5, lines 19-27, page 11, lines 12-19 and page 12, lines 10-27), (4) outputting sound sequences from the working memory via the switching apparatus to the at least one telecommunications terminal that has the connection request being held (*See e.g. id.* at page 10, lines 21-25), and (5) the CPU accessing at least a portion of the working memory for

the switching apparatus of the PBX to output the digitally stored sound sequences (*See e.g. id.* at page 10, lines 21-25).

Claim 30 is an independent claim for a PBX. The PBX of claim 30 must include a CPU having a working memory and a switching device configured to connect to a plurality of communication terminals. (*See e.g.* Specification, at page 10, lines 21-25, and Figures 2-3). The CPU is connected to the switching device. (*See e.g. id.* at page 10, lines 21-25, and Figures 2-3). The plurality of communication terminals is comprised of a first communication terminal and a second communication terminal. (*See e.g. id.* at page 10, lines 21-25, and Figures 2-3). The working memory has digital sound sequences. (*See e.g. id.* at page 10, lines 21-25). The CPU is configured to cause a request for a connection to the second communication terminal that is transmitted by the first communication terminal to be held and the CPU is configured to access the working memory such that the switching device transmits the digital sound sequences from the working memory to the first communication terminal while the request for a connection to the second communication terminal is being held. (*See e.g. id.* at page 3, lines 12-24, page 5, lines 19-27, page 9, lines 12-19, and page 12, lines 10-27).

Claim 31 depends from claim 30 and requires the PBX to also include a TSA connected to the CPU and the working memory. (*See e.g.* Specification, at page 4, lines 10-25). The TSA has a FIFO shift register configured to support a packet-by-packet data transfer of the digital sound sequences for transmitting the digital sound sequences from the working memory to the first communication terminal. (*See e.g. id.* at page 4, lines 10-25, page 6, lines 4-15, page 11, lines 11-28, and page 12, lines 5-19).

Claim 32 depends from claim 30 and requires the PBX to also include a TSA connected to the CPU and the working memory. The TSA is configured to access the working memory to

assign the digital sound sequences to programmed timeslots for transmitting the digital sound sequences from the working memory to the first communication terminal. (*See e.g. id.* at page 4, lines 10-25, page 6, lines 4-15, page 11, lines 11-28, and page 12, lines 5-19).

Claim 33 depends from claim 30 and requires the PBX to also include a TSA and a microcontroller. The TSA is connected to the CPU and the working memory. The TSA has a FIFO shift register. The microcontroller is connected to the CPU and the working memory. The microcontroller is configured to set a start address of the digital sound sequences in the FIFO shift register and a destination address in the working memory for recording sound sequences. (*See e.g. id.* at page 4, lines 10-25, page 6, lines 4-15, page 11, lines 11-28, and page 12, lines 5-19).

## Grounds of Rejection to be Reviewed on Appeal

1. Rejection of claims 12-13, 24, 27-30, and 32-33 as obvious in view of U.S. Patent Application Publication No. 2002/0136384 to McCormack et al. and U.S. Patent No. 6,970,926 to Needham et al.

2. Rejection of claims 14-23, 25-26, and 31-33 as obvious in view of the combination of McCormack et al., Needham et al. and U.S. Patent No. 4,370,743 to Moran.

## Argument

### I. Rejection of Claims 12-13, 24, 27-30, and 32-33 as Obvious in View of U.S. Patent Application Publication No. 2002/0136384 to McCormack et al. and U.S. Patent No. 6,970,926 to Needham et al.

#### A. Burden of Proving Obviousness Under 35 U.S.C. § 103

"All words in a claim must be considered in judging the patentability of that claim against the prior art." (MPEP § 2143.03). "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." (*Id.*)

Obviousness prevents the "issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.'" *KSR International Co. v. Teleflex inc.*, 127 S.Ct. 1727, 1740 (U.S. 2007) (quoting 35 U.S.C. § 103). To show obviousness, an Examiner must show that the improvement is only "the predictable use of prior art elements according to their established functions." *KSR International Co. v. Teleflex inc.*, 127 S.Ct. 1727, 1740 (U.S. 2007).

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." (MPEP § 2143.01). Rejections on obviousness cannot be sustained by mere conclusory statements; instead**, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.** *KSR*, 82 U.S.P.Q.2d at 1396.

For instance, an invention that permits the omission of necessary features and a retention of their function is an indicia of nonobviousness. *In re Edge,* 359 F.2d 896, 149 U.S.P.Q. 556 (CCPA 1966). A conclusory statement to the contrary is insufficient to rebut such an indicia of nonobviousness. (*See* MPEP § 2143.01). As another example, "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." (MPEP § 2143.01). Further, "the proposed modification cannot render the prior art unsatisfactory for its intended purpose." (MPEP § 2143.01).

The Supreme Court set forth the "framework for applying the statutory language of § 103" in *Graham v. John Deere Co.*, 383 U.S. 1, (1966). *KSR International Co.*, 127 S.Ct. 1727, 1734, 82 U.S.P.Q.2d 1385 (U.S. 2007). To make an obviousness determination, underlying factual determinations must first be made. *Graham*, 383 U.S. at 17. The scope and content of the prior art must be determined, the differences between the prior art and the claims at issue must be ascertained, and the level of ordinary skill in the pertinent art must be resolved. *Id.* Moreover, obviousness must not be distorted by using hindsight bias or *ex post* reasoning. *KSR International Co.*, 127 S.Ct. at 1742 (U.S. 2007) (citing *Graham*, 383 U.S. at 36).

Secondary considerations may also be provided to show that an asserted combination would not render claimed subject matter predictable or obvious. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). These secondary considerations include failure of others, unexpected results and the prior art teaching away from the invention. *Id.* at 17-18; *In re Beattie*, 974 F.2d 1309, 1313 (Fed. Cir. 1992) (declarations from those skilled in the art praising the claimed invention and opining that the art teaches away from the invention should be considered); *In re Sullivan*, 498 F.3d 1345, 1352 (Fed. Cir. 2007).

**B. <u>Claims 12-13, 24, 27-30, and 32-33 are Allowable</u>**

Claim 12 defines a method that includes storing digital sound sequences on the working memory of a PBX, connecting at least one telecommunication terminal to the PBX, holding a connection request from at least one telecommunication terminal requesting a connection to another communication terminal, a CPU of the PBX accessing the working memory of the CPU, and the switch device of the PBX transmitting the digital sound sequences from the working memory to at least one telecommunication terminal while the connection request of the at least one telecommunication terminal is being held. Claims 13-25 and 27-29 depend directly or indirectly from claim 12 and, therefore, also contain the limitations of claim 12.

McCormack et al. disclose a PBX that includes a MOH (music on hold) server built into the PBX. (McCormack et al., Figure 5, ¶78). However, McCormack et al. do not teach, show or otherwise disclose a PBX that includes digital sound sequences stored on working memory of the PBX's CPU or a switch device configured to transmit the digital sound sequences stored on the working memory of a PBX's CPU while the connection request of one or more communication terminals is being held.

Neither McCormack et al. or Needham et al. show or suggest any arrangement of a PBX that includes a CPU of the PBX accessing the working memory of the CPU for transmission of sound signals to a communication terminal while that communication terminal is being held. Nor does McCormack et al. show or teach a switch device of the PBX transmitting the digital sound sequences from the working memory of a PBX's CPU to any telecommunication terminals while the connection request of those one or more telecommunication terminals are being held.

For example, McCormack et al. only show or teach a music on hold server being included in a housing that also includes a PBX (McCormack et al., Fig. 5, ¶ 78). The MOH (music on hold) server would necessarily include its own controllers and memory. (*Id.* at ¶ 78). The teaching provided by McCormack et al. is that the MOH server and a PBX server may be housed within the same housing instead of being located in separate locations or in separate housings. There is no disclosure nor suggestion of any component, arrangement of components or functions provided by components of the PBX that are configured to provide MOH services as required by claims 12-25 and 27-39. To the contrary, McCormack et al. teach that such functionality is provided by the components of the built-in MOH server. (McCormack et al., ¶ 78).

## C. **Claim 29 is Independently Allowable**

Claim 29 defines a method for handling digitally stored sound sequences in a telecommunications system that must include digitally storing sound sequences in the working memory of a PBX's CPU, connecting telecommunications terminals to a PBX via a switching apparatus, holding a connection request of at least one telecommunications terminal, and outputting sound sequences from the working memory via the switching apparatus to the at least one telecommunications terminal that has the connection request being held. The CPU must access at least a portion of the working memory for the switching apparatus of the PBX to output the digitally stored sound sequences stored in the working memory of the PBX's CPU.

As discussed above with reference to claim 12, McCormack et al. do not teach or suggest a CPU of a PBX that accesses at least a portion of its working memory of a PBX for the PBX to output or transmit digitally stored sound sequences. Therefore, claim 29 is not anticipated by McCormack et al.

## D. **Claims 30-33 are Independently Allowable**

Claim 30 requires a PBX to include a CPU having a working memory, and a switching device configured to connect to at least one communication terminal. The CPU is connected to the switching device. The working memory has digital sound sequences. **The CPU of the PBX is configured to access the working memory such that the switching device transmits the digital sound sequences from the working memory to the at least one communication terminal while a request for a connection to another communication terminal is being held by the PBX.** Claims 31-33 depend directly or indirectly from claim 30 and, therefore, also contain the limitations of claim 30.

As discussed above with reference to claim 12 and the claims that depend from claim 12, neither McCormack et al. nor Needham et al. teach or otherwise disclose a PBX that includes a

CPU that has working memory with digital sound sequences stored on the working memory. Indeed, McCormack et al. require a PBX to include a separate, built-in MOH server. (McCormack et al., at ¶ 78). Such a built-in MOH server requires the MOH server to include its own processors, memory, and other components. The MOH server does not share a CPU that processes the PBX functions nor a working memory of a CPU that has sound sequences that are to be transmitted to at least one terminal that has its connection request being held by the PBX as required by the PBX of claims 30-33.

In the Office Action of November 24, 2009, the Examiner states that the Examiner disagrees with Applicant's argument "because, the applicant did not claim [*sic*] limitation." (Office Action of November 24, 2009, at 2). To the contrary, the claims, such as claim 30, make it very clear that the PBX or the CPU of the PBX is configured to hold a call while also accessing working memory to transmit digital sound sequences stored on its working memory. None of the cited art teaches or suggests such a PBX.

### E. McCormack et al. Teach Away From Limitations of the Claims

McCormack et al. teach away from a PBX that includes a CPU that has working memory that has sound sequences stored in the working memory. Indeed, McCormack et al. require a PBX to include a separate MOH server built into the PBX, which requires a separate MOH processor and memory for the MOH server. (McCormack et al., at ¶ 78). Requiring separate CPUs and separate working memory for the PBX and MOH services is contrary to the requirements of the pending claims.

Indeed, McCormack et al. teach the opposite of the pending claims. The claims require a PBX to be configured to have a CPU and working memory that are configured to provide MOH services while also providing PBX services. McCormack et al. require separate servers with separate CPUs and working memory to provide such services.

### F. The Elimination of the Built in MOH Server Shows the Pending Claims are not Rendered Obvious By The Cited Art

An invention that permits the omission of necessary features and a retention of their function is an indicia of nonobviousness. *In re Edge,* 359 F.2d 896, 149 U.S.P.Q. 556 (CCPA 1966); MPEP 2144.04. A conclusory statement to the contrary is insufficient to rebut such an indicia of nonobviousness. *See* MPEP § 2143.01.

McCormack et al. require a PBX to include a separate MOH server built into a PBX to provide MOH services. (McCormack et al., at ¶ 78). The separate MOH server includes its own central processor, microcontrollers and memory. (*Id.* at ¶¶ 17, 63-64, 77-78). As noted in the specification of the present application, a separate MOH server is not required by the PBX of the pending claims, such as an IP-PBX or other PBX. Indeed, the separate hardware and other components of a MOH server is eliminated as necessary components by the configuration of the CPU and working memory of the PBX as required in the pending claims. (*See* Specification, at page 2, lines 18-25, page 6, lines 18-23, page 12, lines 20-27). The elimination of the expensive hardware features of the MOH server with the retention of their function is an indicia of nonobviousness and shows that the cited art does not render the pending claims obvious. (*See e.g.* Specification, at page 3, lines 17-25, page 6, lines 18-23, and page 12, lines 20-27).

## II. Rejection of Claims 14-23, 25-26, and 31-33 as Obvious in View of the Combination of McCormack et al., Needham et al. and U.S. Patent No. 4,370,743 to Moran.

### A. Claims 14-23, 25-26, and 31-33 are Allowable

The combination of McCormack et al., Needham et al. and Moran do not teach or suggest the limitations of the pending claims 1-25 and 27-33. All of the claims require sound sequences to be stored on working memory of a PBX's CPU. Neither McCormack et al., Needham et al. nor Moran teach, suggest or otherwise disclose a PBX that includes digital sound sequences

stored on working memory of the PBX's CPU or a switch device configured to transmit the digital sound sequences stored on the working memory of a PBX's CPU while the connection request of one or more communication terminals is being held. The combination of these references also does not teach or suggest such a limitation.

### 1. The Cited art Does not Teach or Suggest a TSA as Required by Claims 14-17 and 31-32 - These Claims Are Independently Allowable

The Examiner correctly found that McCormack et al. and Needham et al. do not teach or suggest a TSA nor a FIFO shift register. (Office Action, at 6). The Examiner has contended that Moran teaches or suggests a TSA or a FIFO. However, Moran does not teach or suggest a TSA or a FIFO as required by the pending claims.

Claim 14 depends from claim 12 and requires a PBX to include a TSA that is connected to a CPU. The TSA is configured to assign the digital sound sequences to programmed timeslots. Claim 16 depends from claim 14.

Claim 15 depends from claim 12 and requires a PBX to include a TSA that is configured to access the working memory and assign digital sound sequences to programmed time slots. Claim 17 depends from 15.

Claim 31 requires a PBX to include a TSA that has a FIFO shift register configured to support a packet-by-packet data transfer of digital sound sequences transmitted from the working memory of the PBX's CPU. Claim 32 requires a TSA to access working memory of a CPU to be configured to assign the digital sound sequences to programmed timeslots.

Moran does not disclose a PBX that includes a TSA configured to assign digital sound sequences to programmed time slots nor a TSA that is configured to access a working memory and assign sound sequences to programmed time slots. Moran discloses a multimode time division switching system that is configured to transmit sound to a terminal when the terminal is

found to have a phone off its hook or if a digit is dialed by a subscriber. (Moran, Col. 5, lines 31-67 and Col. 6, lines 1-29). Moran does not teach or suggest a TSA that is connected to the CPU of a PBX such that the TSA can access the working memory of a CPU to assign programmed time slots to sound sequences that are outputted while a connection request is being held by the PBX.

Further, as discussed above, McCormack et al. nor Needham et al. teach or suggest a PBX that has a CPU with working memory that is configured to transmit the sound sequences in its working memory to a terminal that has its connection request being held. The combination of Moran, Needham et al. and McCormack et al. do not teach each and every limitation of claims 14-17 or 31-32. These claims are allowable over the cited art.

### 2. Claims 23 and 33 Are Independently Allowable - The Cited art Does not Disclose a TSA as Required by These Claims

Claim 23 requires a CPU to request a microcontroller to set a start address of a digital sound sequence in the FIFO shift register of the TSA and to set a destination address in the working memory for recording sound sequences. Claim 33 requires a TSA to include a microcontroller configured to set a start address in the FIFO shift register of a TSA for recording sound sequences.

The Examiner correctly found that Moran did not teach or suggest recording of sound sequences. (Office Action of November 24, 2009, at 8). However, the Examiner found McCormack et al. taught recording of sound sequences at paragraphs 59, 61-62, 69-71, 73, 76 and 78. (Office Action of August 3, 2010, at 9). To the contrary, McCormack et al. only teach or suggest transmitting sound sequences to a terminal that is having it connection request held. There is no teaching or suggestion of recording sound sequences to the working memory of a

PBX. Nor is there any suggestion of using a TSA and a microcontroller of a PBX to record sound sequences.

Moran does not teach or suggest any recording of any sound sequences nor the setting of a start address in a FIFO shift register by a microcontroller of a PBX to record sound sequences. Neither McCormack et al. nor Needham et al. teach or suggest such requirements. Therefore, the combination of Moran, Needham et al. and McCormack et al. do not teach or suggest these limitations. Claims 23 and 33 are allowable over the cited art.

### B. <u>McCormack et al. Teach Away From Limitations of the Claims</u>

As discussed above in Sections E and F of part I to the Argument, McCormack et al. teach away from a PBX that includes a CPU that has working memory that has sound sequences stored in the working memory. Indeed, McCormack et al. require a PBX to include a separate MOH server built into the PBX, which requires a separate MOH processor and memory for the MOH server. (McCormack et al., at ¶ 78). Requiring separate CPUs and separate working memory for the PBX and MOH services is contrary to the requirements of the pending claims.

Indeed, McCormack et al. teach the opposite of the pending claims. The claims require a PBX to be configured to have a CPU and working memory that are configured to provide MOH services while also providing PBX services. McCormack et al. require separate servers with separate CPUs and working memory to provide such services.

In fact, (and as noted above), the elimination of the expensive hardware features of the MOH server with the retention of their function is an indicia of nonobviousness and shows that the cited art does not render the pending claims obvious. (*See e.g.* Specification, at page 3, lines 17-25, page 6, lines 18-23, and page 12, lines 20-27).

## CONCLUSION

For at least the above reasons, reversal of the rejection of claims 12-25 and 27-33 and allowance of these claims are respectfully requested.

Respectfully submitted,

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## Claims Appendix

The claims on appeal:

12. A method for handling digital sound sequences in a telecommunications system having a PBX comprised of a CPU, a working memory that is connected to the CPU, and a switch device connected to the CPU, the method comprising:

storing digital sound sequences on the working memory of the PBX;

connecting a plurality of telecommunication terminals to the PBX;

holding a connection request from at least one telecommunication terminal requesting a connection to another communication terminal;

the CPU of the PBX accessing the working memory of the CPU;

the switch device of the PBX transmitting the digital sound sequences from the working memory to the at least one telecommunication terminal while the connection request of the at least one telecommunication terminal is being held.

13. The method of claim 12 wherein the CPU performs a data transfer of the stored digital sound sequences between the working memory and the switch device for the switch device to transmit the digital sound sequences to the at least one telecommunication terminal while the connection request of the at least one telecommunication terminal is being held, the switch device being comprised of at least one switch or at least one PCM switch.

14. The method of claim 12 wherein the PBX is also comprised of a time slot assigner (TSA) and data is transferred serially in packets between the PBX and the telecommunication

terminal being held, the CPU connected to the TSA such that the TSA is configured to assign the digital sound sequences to programmed timeslots.

15. The method of claim 13 wherein the PBX is also comprised of a time slot assigner (TSA), wherein data is transferred packet by packet and the CPU is connected to the TSA such that the TSA is configured to access the working memory to assign the digital sound sequences to programmed timeslots.

16. The method of claim 14 wherein the TSA is comprised of a FIFO shift register configured to support a packet-by-packet data transfer of the digital sound sequences.

17. The method of claim 15 wherein the PBX is comprised of a FIFO shift register configured to support a packet-by-packet data transfer of the digital sound sequences.

18. The method of claim 12 wherein the PBX is also comprised of a microcontroller connected to the CPU such that the microcontroller is initialized by the CPU to perform a transfer of the digital sound sequences.

19. The method of claim 18 wherein the microcontroller is a Direct Memory Access (DMA) controller or a Peripheral Exchange Control (PEC) controller.

20. The method of claim 13 wherein the PBX is also comprised of a microcontroller connected to the CPU such that the microcontroller is initialized by the CPU to perform the transfer of the digital sound sequences.

21. The method of claim 18 wherein the CPU requests the microcontroller to set a start address of the digital sound sequences in the working memory and to set a destination address in the FIFO shift register of the TSA in order to play back the digital sound sequences.

22. The method of claim 12 further comprising recording sound sequences, wherein the PBX is also comprised of a microcontroller connected to the CPU and the working memory and a TSA connected to the working memory, the TSA having a FIFO shift register, the CPU configured to request that the microcontroller set a start address of the digital sound sequences in the FIFO shift register of the TSA and to set a destination address in the working memory for recording sound sequences.

23. The method of claim 21 wherein the CPU requests the microcontroller to set the start address of the digital sound sequences in the FIFO shift register of the TSA and to set the destination address in the working memory for recording sound sequences.

24. The method of claim 12 further comprising:

digitizing sound sequences and storing the digitized sound sequences in the working memory by at least one component of the telecommunications system.

25. The method of claim 17 wherein at a predefined filling level of the FIFO shift register, the TSA is configured to transmit an interrupt command the CPU to start or to stop a new data transfer.

27. The method of claim 12 wherein the digital sound sequences are Music on Hold, voice sequences, or signal tones.

28. The method of claim 12 wherein program code and/or data of telecommunications subscribers are stored in the working memory.

29. A method for handling digitally stored sound sequences in a telecommunications system having a PBX comprising a CPU, a working memory for the CPU, and a switching apparatus, the method comprising:

digitally storing sound sequences in the working memory;

connecting telecommunications terminals to the PBX via the switching apparatus;

holding a connection request of at least one telecommunications terminal;

outputting sound sequences from the working memory via the switching apparatus to the at least one telecommunications terminal that has the connection request being held; and

the CPU accessing at least a portion of the working memory for the switching apparatus of the PBX to output the digitally stored sound sequences.

30. A PBX comprising:

a CPU having a working memory; and

a switching device configured to connect to a plurality of communication terminals, the CPU connected to the switching device, the plurality of communication terminals comprised of a first communication terminal and a second communication terminal;

the working memory having digital sound sequences;

the CPU configured to cause a request for a connection to the second communication terminal that is transmitted by the first communication terminal to be held; and

the CPU configured to access the working memory such that the switching device transmits the digital sound sequences from the working memory to the first communication terminal while the request for a connection to the second communication terminal is being held.

31. The PBX of claim 30 wherein the PBX is also comprised of a TSA connected to the CPU and the working memory, the TSA having a FIFO shift register configured to support a packet-by-packet data transfer of the digital sound sequences for transmitting the digital sound sequences from the working memory to the first communication terminal.

32. The PBX of claim 30 wherein the PBX is also comprised of a TSA connected to the CPU and the working memory, the TSA configured to access the working memory to assign the digital sound sequences to programmed timeslots for transmitting the digital sound sequences from the working memory to the first communication terminal.

33. The PBX of claim 30 also comprising a TSA and a microcontroller, the TSA connected to the CPU and the working memory, the TSA having a FIFO shift register, the microcontroller connected to the CPU and the working memory, the microcontroller configured

to set a start address of the digital sound sequences in the FIFO shift register and a destination address in the working memory for recording sound sequences.

**Evidence Appendix**

None.

## Related Proceedings Appendix

None.